



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/896,162      | 06/29/2001  | Richard Henry Dee    | 2001-020-TAP        | 7431             |

7590 11/02/2005

Wayne P. Bailey  
Storage Technology Corporation  
One StorageTek Drive  
Louisville, CO 80028-4309

|          |
|----------|
| EXAMINER |
|----------|

CASTRO, ANGEL A

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2653

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**UNITED STATES DEPARTMENT OF COMMERCE****U.S. Patent and Trademark Office**

Address : COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

|                                 |             |   |                     |
|---------------------------------|-------------|---|---------------------|
| APPLICATION NO./<br>CONTROL NO. | FILING DATE | FIRST NAMED INVENTOR /<br>PATENT IN REEXAMINATION | ATTORNEY DOCKET NO. |
|---------------------------------|-------------|---|---------------------|

09/896162

|          |
|----------|
| EXAMINER |
|----------|

|          |       |
|----------|-------|
| ART UNIT | PAPER |
|----------|-------|

20051030

DATE MAILED:

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner for Patents**

Please find attached the Examiner's Answer regarding the Appeal Brief filed 6/6/05. The Information Disclosure Statement (IDS) filed 7/14/05 has been considered by the Examiner and will be made part of the file record.



UNITED STATES PATENT AND TRADEMARK OFFICE

---

Commissioner for Patents  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

**MAILED**

**NOV 02 2005**

**Technology Center 2600**

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/896,162  
Filing Date: June 29, 2001  
Appellant(s): DEE, RICHARD HENRY

---

Stephen R. Tkacs  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 6/6/05 appealing from the Office action mailed 12/23/04.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 5-7, 9-10, 15-17, 19-21 rejected under 35 U.S.C. 102(b) as being anticipated by Gill (U.S. Pat. 5,751,521).

Regarding claims 5 and 15, Gill discloses a reduced sensitivity spin valve sensor (figure 6), comprising:

at least two magnetically fixed layers 162, 156; and

at least two free layers 158, 164;

wherein the at least two free layers are positioned between the at least two fixed layers;

and

wherein the at least two magnetically fixed layers have a parallel magnetic orientation (see orientation 168, 172).

Regarding claims 6 and 16, Gill discloses that at least one non-magnetic spacer 160 positioned between one of the at least two fixed layers and one of the at least two free layers.

Regarding claims 7 and 17, Gill discloses that the at least two fixed layers 162, 156 have a magnetic orientation approximately 90 degrees from a magnetic orientation of the at least two free layers (orientation 168 is the same as orientation 172 and both are 90 degrees from the orientations 190, 188 of the free layers).

Regarding claims 9 and 19, Gill discloses that the at least two fixed layers and the at least two free layers are spaced from one another by three non-magnetic spacers (154, 134, 160)

Art Unit: 2653

Regarding claims 10 and 20, it is evident from the reference to Gill that the magnetic flux is distributed across the at least two free layers to thereby reduce a magnetic flux fed to each free layer (see figure 6).

Regarding claim 21, Gill further discloses:

First 156, second 158, third 164, and fourth 162 ferromagnetic material layers being separated respectively from one another by three non-magnetic spacer layers 154, 134, 160, the first and fourth ferromagnetic material layers being outermost ferromagnetic material layers with respect to the second and third ferromagnetic material layers;

wherein the first and fourth ferromagnetic material layers have parallel fixed magnetization direction 168, 172;

wherein the second and third ferromagnetic material layers have magnetization directions that can rotate when under applied magnetic fields;

wherein magnetic flux is spread across at least the second and third ferromagnetic material layers to thereby reduce the magnetic flux fed to the second and third ferromagnetic layers.

#### **(10) Response to Argument**

Argument IA.

Appellant asserts in page 11:

"Claim 5 does indeed recite "[a] reduced sensitivity spin valve sensor." Similarly, claim 15 recites "a reduced sensitivity spin valve sensor." However, the Examiner incorrectly interprets "a spin valve sensor" to be plural. The noun phrases in the preamble of claims 5 and 15 are deliberately and undeniably singular. The Examiner also asserts that the spin valve sensor shown in Figure 10B of the instant application is allegedly two spin valve sensors simply because the two free layers are separated by a non-magnetic layer. Appellant respectfully disagrees for the reasons presented below.

Art Unit: 2653

The mere presence of a non-magnetic layer does not indicate that there are actually two spin valve sensors. If that were the case, then Figure 10B would actually show four spin valve sensors, one layer each, because each pair of adjacent ferromagnetic layers in the example shown in Figure 10B is separated by a non-magnetic layer. Similarly, using the logic presented in the Final Office Action, *Gill* actually teaches six spin valve sensors, because of non-magnetic layers 154, 174, 134, 180, and 160. Clearly, this is not the case. Not all non-magnetic layers serve to separate distinct spin valve sensors. For example, non-magnetic layer 174 in *Gill* simply separates free layers that are part of the same spin valve sensor. Similarly, non-magnetic layer 160 in Figure 10B of the instant application also separates free layers of the same spin valve sensor.”

The Examiner respectfully points out that “a reduced sensitivity spin valve sensor” is a relative term and it is not clarified in the claim with respect to what it has a reduced sensitivity. Furthermore, the claim just present two fixed layers and two free layers (not even the non-magnetic layer) without a functional relationship among them that would give a distinguishing characteristic of the spin valve sensor. Furthermore, it is noted that a dual spin valve sensor is actually two spin valve sensors separated by a non-magnetic layer, the difference being a change in nomenclature (see for example Gill et al (U.S. Pat. 5,701,222))

Argument IA1.

Appellant asserts in page 12:

“The Office Action states:

Regarding claims 10 and 20, it is evident from the reference to Gill that the magnetic flux is distributed across the at least two free layers to thereby reduce a magnetic flux fed to each free layer (see Figure 6).

Office Action, dated June 9, 2004. Appellant respectfully disagrees. *Gill* teaches two separate spin valve sensors that include two free layers. Each spin valve sensor includes free layers that are antiparallel in magnetic orientation. The purpose of this is only for determining a differential signal based on the two separate spin valve sensors. As stated above, the response signals of the two spin valve sensors will be 180° out of phase. Thus, the differential produces an enhanced response signal, rather than a reduced response signal, as in the claimed invention. In fact, in *Gill*, insulation layer 134 separates spin

Art Unit: 2653

valve sensor 130 from spin valve sensor 132 by enough spacing to allow the two spin valve sensors to produce separate signals, which must then be combined with differential amplifier 144. Thus, *Gill* does not teach or fairly suggest that the magnetic flux is distributed across the at least two free layers to reduce a magnetic flux fed to each layer, as recited in claims 10 and 20.”

The Examiner respectfully points out that the magnetic flux is distributed across the two free layers as set forth in the reference to *Gill* in column 7, line 64 to column 8, line 30 and therefore reduce the magnetic flux fed to each free layer.

Argument IB.

The Examiner respectfully states that this argument is a repetition of what was previously discussed.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner’s answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,



Angel Castro, Ph.D.

Conferees:



William R. Korzuch

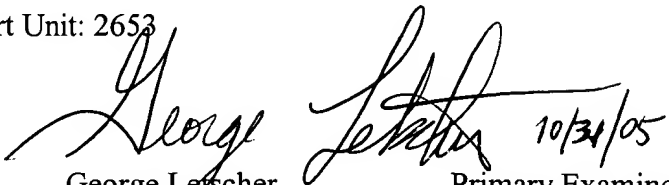
SPE



Application/Control Number: 09/896,162

Page 7

Art Unit: 2653

  
George Letscher Primary Examiner 10/31/05